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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,482	03/10/2006	James M. Conners	12025-2	7798

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DANIEL B. SCHEIN, PH.D., ESQ., INC.
P. O. BOX 68128
Virginia Beach, VA 23471

EXAMINER	
TRIEU, THAI BA	

ART UNIT	PAPER NUMBER
3748	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,482	CONNERS, JAMES M.	
	Examiner	Art Unit	
	Thai-Ba Trieu	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 July 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/02/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

Applicant is required to submit a substitute Oath with the CORRECT STATEMENT set forth below:

"I acknowledge the duty to disclose information which is material to patentability of this application in accordance with Title 37, Code of Federal Regulations Section 1.56."

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: ***"712"*** (See Figures 2-3); and ***"210D"*** (See Figure 25). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters ***"246B"*** and ***"248B"*** have both been used to designate "central bore"; and ***"246B"*** and ***"248B"*** have both been used to designate "key way" (See Figures 12a and 13a). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character ***"236B"*** has been used to designate both ***"retaining clip"*** and ***"unknown element"*** (See Figure 12a). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters ***"204", "212B", "121D", "408", "204B" and "204D"*** have been used to designate ***one component/element*** (See Figure 26). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 and its dependent claims 2-10 and 12-13, and claim 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly

point out and distinctly claim the subject matter which applicant regards as the invention. Specifically,

- In claim 1, line 8 and claim 11, line 19, the recitation of "for receiving fuel and combusting same in a combustion process" renders the claim indefinite, since it is not clear that the combuster means combusts fuel or air fuel mixture? what does the word "same" mean? Does it mean combuster for receiving and combusting fuel in a combustion process with the pressurized air? Applicant is required to clarify or to revise the claimed limitation.

- In claim 1, line 14 and claim 11, lines 25-26, the recitation of "for receiving the second exhaust products and expanding same substantially adiabatically..." renders the claim indefinite, since it is not clear that what does the word "same" mean? Does it mean a positive gas expander for receiving and expanding substantially adiabatically the second exhaust products to produce...? Applicant is required to clarify or to revise the claimed limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 8-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (Patent Number 3,989,011), in view of Holtzapple et al. (Pub. Number US 2002/0014069 A1).

Takahashi discloses an engine for use with a load, said engine comprising: a compressor (C1, C2) adapted to receive power and, upon receiving power, to: periodically define a chamber; fill the chamber with ambient air; and carry out a pressurization process wherein the chamber volume is decreased to produce pressurized air,

combuster means (B1, B2) for receiving fuel and combusting same in a combustion process with the pressurized air to produce primary exhaust products,

a positive displacement air motor (M1) adapted to be driven by the primary exhaust products to produce power and secondary exhaust products,

a positive displacement gas expander (M2) for receiving the secondary exhaust products and. expanding same substantially adiabatically to produce tertiary exhaust products and power, and

power transfer means (22) for directing power produced by the air motor (M1) and the gas expander (M2) in use to drive the compressor (C1, C2) and the load,

wherein:

the combuster means (B1, B2) is adapted to receive varying amounts of fuel, thereby to cause the power transfer means (22) to drive the load with varying amounts of power in use; and the compressor (C1, C2) is adapted to, during the pressurization process, release air from the chamber for said combustion in a manner such that the

pressure in the chamber during the pressurization process and the pressure of the primary exhaust products driving the air motor (M1) is at a substantially constant level at steady state conditions, said level adjusting spontaneously to the load being driven by the power;

wherein the compressor (C1, C2) is a rotary compressor;

wherein the air motor (M1) is a rotary air motor; wherein the gas expander (M2) is a rotary gas expander;

wherein the power transfer means (22) comprises a shaft operatively coupled to each of the compressor (C1, C2), the air motor (M1) and the gas expander (M2);

wherein the expansion ratio defined by the expander (M2) is larger than the compression ratio defined by the compressor (C1, C2) (See Figures 1-5, Column 2, lines 37-67, Column 3, lines 1-67, Column 4, lines 1-11 and 25-41, Column 5, lines 11-30).

However, Takahashi fails to disclose a radiator and its location; and wherein the combuster means comprising a tubular combuster.

Holtzapple teaches that it is conventional in the engine art, to utilize a radiator (108) adapted to receive pressurized air from the compressor (106) and to cool pressurized air so received and the radiator (108) also serving as a reservoir adapted to receive pressurized air from the compressor (106) and wherein the combuster means (108) receives air for said combustion from the radiator (108) (See Figure 1), and the combuster means (900) comprises a tubular combuster (See Figure 9).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized a radiator and its location; and wherein the combuster means comprising a tubular combuster, as taught by Holtzapple, to improve the efficiency of the Takahashi device.

Note that the recitation of "serving as a reservoir adapted to receive pressurized air from the compressor and wherein the combuster means receives air for said combustion from the radiator" is considered as the functional language. Holtzapple radiator (108) is capable of performing the same desired functions as the instant invention having been claimed in claims 8 and 9.

Claims 1-6, 8-10, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sauder (Patent Number 3,724,427), in view of Holtzapple et al. (Pub. Number US 2002/0014069 A1).

Sauder discloses an engine for use with a load, said engine comprising: a compressor (204, 206, 208) adapted to receive power and, upon receiving power, to: periodically define a chamber; fill the chamber with ambient air; and carry out a pressurization process wherein the chamber volume is decreased to produce pressurized air,

combuster means (230) for receiving fuel and combusting same in a combustion process with the pressurized air to produce primary exhaust products,

a positive displacement air motor (236) adapted to be driven by the primary exhaust products to produce power and secondary exhaust products,

a positive displacement gas expander (238) for receiving the secondary exhaust products and. expanding same substantially adiabatically to produce tertiary exhaust products and power, and

power transfer means (202) for directing power produced by the air motor (236) and the gas expander (236) in use to drive the compressor (204, 206, 208) and the load,

wherein:

the combuster means (230) is adapted to receive varying amounts of fuel, thereby to cause the power transfer means (22) to drive the load with varying amounts of power in use; and the compressor (204, 206, 208) is adapted to, during the pressurization process, release air from the chamber for said combustion in a manner such that the pressure in the chamber during the pressurization process and the pressure of the primary exhaust products driving the air motor (236) is at a substantially constant level at steady state conditions, said level adjusting spontaneously to the load being driven by the power;

wherein the compressor (204, 206, 208) is a rotary compressor;

wherein the air motor (236) is a rotary air motor; wherein the gas expander (238) is a rotary gas expander;

wherein the power transfer means (22) comprises a shaft operatively coupled to each of the compressor (204, 206, 208), the air motor (236) and the gas expander (238);

wherein the expansion ratio defined by the expander (238) is larger than the compression ratio defined by the compressor (204, 206, 208);

wherein the compressor (204, 206, 208) is a three-stage compressor (See Figures 9-10, Column 7, lines 35-67, Column 8, lines 1-35).

However, Sauder fails to disclose a radiator and its location; and wherein the combuster means comprising a tubular combuster.

Holtzapple teaches that it is conventional in the engine art, to utilize a radiator (108) adapted to receive pressurized air from the compressor (106) and to cool pressurized air so received and the radiator (108) also serving as a reservoir adapted to receive pressurized air from the compressor (106) and wherein the combuster means (108) receives air for said combustion from the radiator (108) (See Figure 1), and the combuster means (900) comprises a tubular combuster (See Figure 9).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized a radiator and its location; and wherein the combuster means comprising a tubular combuster, as taught by Holtzapple, to improve the efficiency of the Sauder device.

Note that the recitation of "serving as a reservoir adapted to receive pressurized air from the compressor and wherein the combuster means receives air for said combustion from the radiator" is considered as the functional language. Holtzapple radiator (108) is capable of performing the same desired functions as the instant invention having been claimed in claims 8 and 9.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Takahashi (Patent Number 3,989,011) or Sauder (Patent Number 3,724,427), in view of Holtzapple et al. (Pub. Number US 2002/0014069 A1), and further in view of Wright (Patent Number 6,347,611 B1).

The modified Takahashi/Sauder device discloses the invention as recited above; however, fails to disclose a pressurized air reservoir.

Wright teaches that it is conventional in the rotary engine art, to utilize a reservoir (24) adapted to receive pressurized air from the compressor (27) and wherein the combuster means (18, 18') receives air for said combustion from the reservoir (24) (See Figure 1, Column 3, lines 63-67, and column 4, lines 1-5).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized a pressurized air reservoir, as taught by Wright, to improve the efficiency and to reduce harmful emissions of the modified Takahashi/Sauder device.

Allowable Subject Matter

Claim 11 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Conclusion

The IDS (PTO-1449) filed on July 02, 2007 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Palmer (US Patent Number 5,522,356) discloses a heat engine.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTB
July 20, 2007

Thai-Ba Trieu
Primary Examiner
Art Unit 3748